

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference F 04-047-PCT	<div style="display: flex; justify-content: space-between;"> <div> FOR FURTHER ACTION </div> <div> see Form PCT/ISA/220 as well as, where applicable, item 5 below. </div> </div>
International application No. PCT/JP2004/014213	<div style="display: flex; justify-content: space-between;"> <div> International filing date (<i>day/month/year</i>) 29. 09. 2004 </div> <div> (Earliest) Priority Date (<i>day/month/year</i>) 29. 09. 2003 </div> </div>
Applicant Nippon Shokubai Co., Ltd.	

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. ☒ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. ☐ Certain claims were found unsearchable (see Box No. II)

3. ☐ Unity of invention is lacking (see Box No. III)

4. With regard to the title,

☒ the text is approved as submitted by the applicant

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the drawings,

a. the figure of the drawings to be published with the abstract is Figure No. _____

☐ as suggested by the applicant

☐ as selected by this Authority, because the applicant failed to suggest a figure

☐ as selected by this Authority, because this figure better characterizes the invention

b. ☒ none of the figures is to be published with the abstract

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Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.b of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:

a. type of material



a sequence listing



table(s) related to the sequence listing

b. format of material



on paper



in electronic form

c. time of filing/furnishing



contained in the international application as filed



filed together with the international application in electronic form



furnished subsequently to this Authority for the purposes of search

2. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. Additional comments:

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A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl⁷ C12P7/24, C07C29/141, C07C31/20, C07C45/65, C07C47/22,
C07C51/235, C07C59/01, C07C67/39, C07C69/653, C12P7/18,
C12P7/40, C12P7/42, C12P7/62, C07B61/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl⁷ C12P7/24, C07C29/141, C07C31/20, C07C45/65, C07C47/22,
C07C51/235, C07C59/01, C07C67/39, C07C69/653, C12P7/18,
C12P7/40, C12P7/42, C12P7/62, C07B61/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
CAPLUS/MEDLINE/BIOSIS/WPIDS (STN)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
$\frac{X}{Y}$	Vancauwenberge, J.E. et al., "Bacterial conversion of glycerol to beta-hydroxy propionaldehyde", Appl.Environ.Microbiol., (1990), Vol.56, No.2, pages 329 to 332, particularly, Fig. 4	$\frac{1-3}{4-8}$
$\frac{X}{Y}$	Slininger, P.J. et al., "Optimizing aerobic conversion of glycerol to 3-hydroxypropional dehyde", Appl.Environ.Microbiol., (1985), Vol.50, No.6, pages 1444 to 1450, particularly, Fig. 3, Table 2	$\frac{1-3}{4-8}$
Y	Slininger, P.J. et al., "Production of 3-Hydroxypropionaldehyde from Glycerol", Appl. Environ.Microbiol., (1983), Vol.46, No.1, pages 62 to 67, particularly, Figs. 1, 2	1-8

☒ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
25 November, 2004 (25.11.04)

Date of mailing of the international search report
14 December, 2004 (14.12.04)

Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 5-213800 A (Degussa AG.), 24 August, 1993 (24.08.93), & CA 2079655 A & EP 535565 A1 & DE 4132663 A & AU 2609692 A & BR 9203789 A & US 5364984 A	4
Y	JP 2000-154164 A (Mitsui Chemicals, Inc.), 06 June, 2000 (06.06.00), (Family: none)	8
Y	Skraly, F.A. et al., "Construction and Characterization of a 1,3-Propanediol Operon", Appl.Environ.Microbiol., (1998), Vol.64, No.1, pages 98 to 105	1-8
Y	TOBIMATSU, T. et al., "Identification and Expression of the Genes Encoding a Reactivat ing Factor for Adenosylcobalamin-Dependent Glycerol Dehydratase", J.Bacteriol., (1999), Vol.181, pages 4110 to 4113	1-8